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| CANTOR COLBURN, LLP | | | MACCHIAROLO, PETER J | |
| 55 GRIFFIN ROAD SOUTH | | | ART UNIT | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/523,984

Applicant(s)

CHUNG ET AL.

Examiner

Peter J. Macchiarolo

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The reply filed on 03/20/2007 consists of changes to the specification and to the claims, and further, the reply consists of remarks related to the prior rejection of claims in the previous Office Action. The above have been entered and considered. However, pending claims 1-26 are not allowable as explained below.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-11 and 13-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Codama (USPN 6037712; “Codama”).

Regarding claim 1, Codama discloses at least in figures 1b and 13a-d a display device comprising: a substrate (fig. 1b; 1) having a first region (fig. 13a; 120a) and a second region (fig. 13a; 121) surrounding the first region; a plurality of first electrodes (fig. 1; 2) disposed in the first region; an insulation member (the structure consisting of elements 3-5) arranged in the first region and having a plurality of openings (not labeled) that expose a portion corresponding to each of the first electrodes (2); light emitting patterns (6) disposed directly on the first electrodes (2), the light emitting patterns (6) filling up the openings (not labeled), respectively; and a

Art Unit: 2879

second electrode (7) disposed on the light emitting patterns (6) and directly on the insulation member (3-5).

Regarding claim 2, Codama discloses at least in figure 1b a plurality of dummy light emitting patterns (6 formed on top of 5) formed in the second region (fig. 13a; 121 corresponding to fig. 1; 4 and 5) of the substrate (1).

Regarding claim 3, Codama discloses at least in figures 1b and 13a-d the openings (fig. 13a; 120a) have a rectangular shape that has a pair of long sides and a pair of short sides, and the openings (120a) are arranged in a matrix shape along a first direction (horizontal in fig. 13a) that is substantially parallel with the long sides and a second direction (vertical in fig. 13a) that is substantially parallel with the short sides in the first region.

Regarding claim 4, Codama discloses at least in figures 1b and 13a-d a side face (side face of 4) of the insulation member (3-5) is extended from the first region (fig. 13a; 120a) to the second region (fig. 13a; 121) in the first direction (horizontal in fig. 13a) and an extending length of the insulation member (width of 4) is equal to or less than a width formed between the openings.

Regarding claim 5, Codama discloses at least in figures 1b and 13a-d a side face (side face of 4) of the insulation member (3-5) is extended from the first region to the second region in the second direction (vertical in fig. 13a), and an extending length (width of 4) is equal to or less

Art Unit: 2879

than a width formed between the openings (not labeled width between edges of neighboring elements 3).

Regarding claim 6, Codama discloses at least in figures 1b and 13a-d the openings (not labeled) are essentially disposed on the center of the first electrodes (2), respectively.

Regarding claim 7, Codama discloses at least in figures 1b and 13a-d each of the light emitting patterns (6) includes a hole injection layer (not shown) and a light emitting layer (not shown), and the light emitting layer is formed on the hole injection layer (see at least col. 9, ll. 3-15).

Regarding claim 8, Codama discloses at least in figures 1b, 13a-d, and col. 7, ll. 7-15 an inside wall of the openings (tapered side edge of 3) has an angle about 30 to 165 with respect to the first electrodes (2) formed on the substrate (1).

Regarding claim 9, Codama discloses at least in figures 1b and col. 9, ll. 3-15 the first electrodes (2) include a transparent conductive material (ITO), and the second electrode (7) includes an opaque conductive material (an Mg/Ag alloy).

Regarding claim 10, Codama discloses at least in figures 1b and col. 4, ll. 54-65 the insulation member (3-5) includes an organic material, an inorganic material or a photoresist material.

Regarding claim 11, Codama discloses at least in figures 1b, 13a-d a display device comprising: a substrate (1) having a first region (fig. 13a; 120a) and a second region (fig. 13a; 121) surrounding the first region (fig. 13a; 120a); a plurality of first electrodes (2) disposed in the first region (fig. 13a; 120a); an insulation member (the structure comprising elements 3-5) formed on a whole surface of the substrate (1) to cover the first electrodes (2), the insulation member (3-5) having a groove (U-shaped slot confined between the elements 3, 4, and 5 having depth 39 best seen in figure 1a) and a plurality of openings (best seen from plan view in figure 13a; 120b), the grooves (U-shaped slot) formed between (undercut length) the first (fig. 13a; 120a) and second regions (fig. 13a; 121), and the openings formed on the first electrode (2); light emitting patterns (6) disposed directly on the first electrodes (2), the light emitting patterns (6) filling up the openings (120a), respectively; and a second electrode (7) disposed on the light emitting patterns (6) and directly on the insulation member (3-5).

Regarding claim 13, Codama discloses at least in figures 1b and 13a-d the insulation member (3-5) includes an organic material, an inorganic material or a photoresist material.

Regarding claim 14, Codama discloses at least in figures 1b and 13a-d a plurality of dummy light emitting patterns (6 on top of 5) are formed on the substrate (1) corresponding to the groove, and an insulation layer (5) is formed corresponding to the second region (fig. 13a; 121) of the substrate (1).

Regarding claim 15, Codama discloses at least in figures 1b and 13a-d a display device comprising: a substrate (1) having a first region (fig. 13a; 120a) and a second region (fig. 13a; 121) surrounding the first region (fig. 13a; 120a); a plurality of first electrodes (2) disposed in the first region; an insulation film (the structure consisting of elements 3-5), formed on the substrate (1) to cover the first electrodes (2), having a plurality of first and second openings (not labeled), the first openings (not labeled opening in fig. 1b, located between closest edges of adjacent 5) exposing a portion corresponding to each of the first electrodes (2), the second openings (not labeled opening in fig. 1a, corresponding to width between closest edges of 4) disposed in the second region (fig. 13a; 121); light emitting patterns (6) disposed directly on the first electrodes (2), the light emitting patterns (6) filling up the first openings (not labeled opening if fig. 1b, located between closest edges of adjacent 5), respectively; and a second electrode (7) disposed on the light emitting patterns (6) and directly on the insulation member (3-5).

Regarding claim 16, Codama discloses at least in figures 1b and 13a-d a first width of the first openings (not labeled opening in fig. 1b, located between closest edges of adjacent 5) is equal to or less than a second width of the second openings (not labeled opening in fig. 1a, corresponding to width between closest edges of 4).

Regarding claim 17, Codama discloses at least in figures 1b and 13a-d a plurality of dummy light emitting patterns (6 on top of 5) are formed on the substrate (1, via 3-5)

Art Unit: 2879

corresponding to each of the second openings (not labeled opening in fig. 1a, corresponding to width between closest edges of 4).

Regarding claim 18, Codama shows at least in figures 3a-1 to figure 4c a method of manufacturing a display device comprising forming a plurality of first electrodes (2) in a first region (fig. 13a; 120a) formed on a substrate (1); forming an insulation member (the structure consisting of elements 3-5) on the first region, wherein the insulation member has a plurality of openings (not labeled openings between two adjacent 5) each exposing a portion corresponding to each of the first electrodes (2); forming light emitting patterns (6) directly on the first electrodes (2), respectively; and forming a second electrode (7) in the first region to cover the light emitting patterns (6) and directly on the insulation member (element 3 of the structure consisting of elements 3-5).

Regarding claims 19 and 20, Codama shows at least in figures 3a-1 to figure 4c a conductive layer (ITO 2) including a transparent conductive material is formed on the substrate (1) and the conductive material (2) is patterned to form the first electrodes (2) in the first region (fig. 13a; 120a).

Regarding claim 21, Codama shows at least in figure 13a the openings (fig. 13a; 120a) have a rectangular shape, the openings have a pair of long sides to face each other and a pair of short sides to face each other, and the long sides are disposed in a first direction (horizontal in

Art Unit: 2879

fig. 13a) and the short sides are disposed in a second direction (vertical in fig. 13a) substantially perpendicular to the first direction, and the openings are disposed in a matrix shape.

Regarding claim 22, Codama shows at least in figures 3a-1 to 4c the insulation member (3-5) is formed by: forming an insulation layer (3-5) on the first (fig. 13a; 120a) and second (fig. 13a; 121) regions; and patterning the insulation layer (3-5) to expose the first electrode (2) in the first region and to remove portions of the insulation layer (3-5) in the second region (see for example figure 4c).

Regarding claim 23, Codama shows at least in figures 3a-1 to 4c the openings (not labeled) are essentially disposed on the center of the first electrodes (2).

Regarding claim 24, Codama shows at least in figures 3a-1 to 4c an edge portion of the insulation member (edge of 5 of the structure comprising elements 3-5) is extending from the first region (fig. 13a; 120a) to the second region (fig. 13a; 121) so that the openings (not labeled opening in fig. 1a, corresponding to width between closest edges of 4) continue into the second region (fig. 13a; 121) and have substantially a same interval as an interval between the openings (not labeled opening in fig. 1b, located between closest edges of adjacent 5) of the first region (fig. 13a; 120a).

Regarding claim 25, Codama discloses at least in col. 9, ll. 3-15 a hole injection material (not shown) as a droplet shape is dropped on the first electrode (2) so as to form a hole injection

Art Unit: 2879

layer (not shown) of the light emitting patterns (6) and a light emitting material (not shown) as a droplet shape is dropped on the hole injection layer so as to form a light emitting layer (not shown) of the light emitting patterns (6).

Regarding claim 26, Codama discloses at least in figures 1a and 1b, a plurality of dummy light emitting patterns (6 on top of 5) are disposed in the second region (fig. 13a; 121), which will inherently adjust a speed of drying the light emitting patterns.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Codama.

Regarding claim 12, Codama is silent to the exact dimensions of the groove (having width 39 shown in figure 1a) and the openings (corresponding to width of 120a shown in figure 13a).

However, one having ordinary skill in the art would be motivated to form the groove equal to or more than a width of the openings to allow for a more reliable manufacturing method and device, as evidenced in figures 13b and 13c. Furthermore, an increased undercut length in Codama's device will allow for improved contrast between light emitting pixels.

Art Unit: 2879

Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct Codama's groove having a width being equal to or more than a width of the openings to allow for a more reliable device with improved contrast.

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

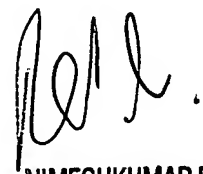
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 2879

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Macchiarolo whose telephone number is (571) 272-2375. The examiner can normally be reached on 8:30 - 5:00, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on (571) 272-2475. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'PJM', with a small 'pjm' printed in the background.A handwritten signature in black ink, appearing to be 'N. Patel', written in a stylized cursive script.

**NIMESHKUMAR D. PATEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800**